

PRELIMINARY AMENDMENT

Prior to the examination of the application with the elected subject matter, please amend the instant application as follows. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

*SMB/JD*

1. (Original) A multi-functional fibrous monolith structure comprising:
  - an inner ceramic phase;
  - an intermediate metal phase;
  - an outer ceramic phase.
2. (Original) The multi-functional fibrous monolith structure in Claim 1 wherein the intermediate metal phase is a interface strip deposited in a controlled array format to allow for strain measurement.
3. (Original) The multi-functional fibrous monolith structure in Claim 1 wherein the intermediate metal phase is a interface strip deposited in a controlled array format to allow for temperature measurement.
4. (Original) The multi-functional fibrous monolith structure in Claim 1 wherein the intermediate metal phase is a interface strip deposited in a controlled array format to allow the measurement of damage propagation.
5. (Original) The multi-functional fibrous monolith structure in Claim 1 wherein the intermediate metal phase is a interface strip deposited in a controlled array format to allow for temperature measurement and strain measurement.
6. (Original) The multi-functional fibrous monolith structure in Claim 1 wherein the intermediate metal phase comprises W and Re.

7. (Original) The multi-functional fibrous monolith structure in Claim 1 wherein the inner ceramic phase is ZrB<sub>2</sub>, the intermediate metal phase is BN, and the outer ceramic phase is B<sub>4</sub>C.

8. (Original) The multi-functional fibrous monolith structure in Claim 1 wherein the inner ceramic phase is Tungsten Carbide, the inner metal phase is a Tungsten-Iron-Nickel Alloy, and the outer ceramic phase is Tungsten Carbide.

9. (Original) The multi-functional fibrous monolith structure in Claim 1 incorporated in a drill bit insert capable of measuring strain during drilling operation.

10. (Original) The multi-functional fibrous monolith structure in Claim 1 incorporated in a machine tool capable of measuring strain.

11. (Original) The multi-functional fibrous monolith structure in Claim 1 incorporated in rocket nozzle capable of generating an electric current.

12. (Original) The multi-functional fibrous monolith structure in Claim 1 incorporated in a rocket nozzle capable of measuring temperature.

13. (Original) The multi-functional fibrous monolith structure in Claim 1 incorporated in a drill bit capable of measuring temperature and strain during drilling operation.

14. (Original) The multi-functional fibrous monolith structure in Claim 1 incorporated in a electronic casing to prevent neutron-related damage of electronics behind the casing.

Claims 15-24 (Canceled).

25. (New) The multi-functional fibrous monolith structure of Claim 1 wherein one or more of the phases contains an electro-mechanically active ceramic material.

26. (New) The multi-functional fibrous monolith structure of Claim 1 wherein one or more of the phases is piezoelectric.

27. (New) The multi-functional fibrous monolith structure of Claim 26 where one or more of the phases contains a ceramic material selected from the group consisting of lead zirconate titanate, lead lanthanum zirconate titanate, lead barium zirconate titanate, lead stannate zirconate titanate, lead magnesium niobate, and mixtures thereof.

28. (New) The multi-functional fibrous monolith structure of Claim 27 wherein at least one other phase includes a conductive ceramic, metallic or ceramic-metallic material.

29. (New) The multi-functional fibrous monolith structure of Claim 28 wherein the conductive material is generally embedded within the structure and functions as one or more electrodes.

30. (New) The multi-functional fibrous monolith structure in Claim 25 wherein one or more of the phases contains electrically insulating material.

31. (New) The multi-functional fibrous monolith structure of Claim 1 wherein the inner ceramic phase and the outer ceramic phase include the essentially same material composition.

32. (New) A multi-functional fibrous monolith composite structure comprising a controlled arrangement of structural elements that each include a central portion of a first material for imparting a first functionality to the structure and an outer portion of a second material different from the first material and generally surrounding the first portion for imparting a second functionality to the structure, wherein the composite structure exhibits two or more discrete functional capabilities.